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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/430,697	10/29/1999	AJAY DHOLAKIA	RAL9-99-0062	7637

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EXAMINER	
ODOM, CURTIS B	
ART UNIT	**PAPER NUMBER**
2634	

DATE MAILED: 06/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/430,697	DHOLAKIA ET AL.	
	Examiner	Art Unit	
	Curtis B. Odom	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4-11,15-22 and 26-33* is/are allowed.

6)☒ Claim(s) *1-3,12-14 and 23-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/24/04 have been fully considered but they are not persuasive. Applicant states that the claim limitation "selecting a sign pattern length comprising a positive integer that is wholly divisible by four and is not wholly divisible by three" is a restriction that is a "key, objective requirement of the present application", and "a clear and key element of the presently claimed invention. However, the claims do not recite how this limitation is a "key, objective requirement of the present application", or in other words, how this restriction of the sign pattern length makes the claimed invention patentable over the prior art reference of Olafsson (U. S. Patent No. 6, 332, 009). Olafsson discloses the sign pattern length can be fixed to any suitable number (column 14, lines 53-65 and column 16, lines 58-64, wherein L is the sign pattern length). Even though the example disclosed by Olafsson discloses a sign pattern length which does not meet the restriction, the disclosure made by Olafsson regarding the sign pattern does meet the restriction. The sign pattern length can be fixed to **any suitable number**. The limitation "any suitable number" includes a positive integer that is wholly divisible by four and is not wholly divisible by three, which meets the restriction of the claimed invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-3 and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Olafsson (previously cited in Office Action 9/30/02).

Regarding claim 1, Olafsson discloses a system (Fig. 4, block 202) for generating a sign pattern for a digital impairment learning (DIL) signal, comprising:

means (Fig. 4, block 402) for selecting a sign pattern length comprising a positive integer that is wholly divisible by four and is not wholly divisible by three (column 16, lines 58-64, wherein it is obvious that if a pattern of length L can be fixed to any suitable number as stated herein, then a number can be selected which is wholly divisible by four and is not wholly divisible by three, such as 16), the sign pattern comprising an even subsequence and an odd subsequence (column 14, lines 39-43), each subsequence comprising zeros and ones

corresponding to negative and positive signs (Fig. 4, block 420 and column 4, lines 35-42), respectively;

means (Fig. 4 , block 402) for balancing a number of zeros in the even subsequence with a number of ones in the even subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence; and

means (Fig. 4 , block 402) for balancing a number of zeros in the odd subsequence with a number of ones in the odd subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence

Regarding claim 2, Olafsson discloses a system as recited in claim 1, wherein the DIL signal comprises at least on DIL segment having a DIL segment length (column 14, line 58) and wherein the means (Fig. 4, block 402) for selecting the sign pattern length comprises:

means (Fig. 4, block 402) for selecting a sign pattern length (column 14, line 58) comprising a positive integer (column 14, lines 39-41) that is wholly divisible by four, that is not wholly divisible by three and that wholly divides the DIL segment (column 16, lines 58-63), wherein the sign pattern length can be fixed to any suitable number.

Regarding claim 3, Olafsson discloses a system (Fig. 4, block 202) as recited in claim 2, wherein the DIL segment length divided by six is a power of two (column 16, lines 58-63), wherein the segment length can be fixed to any suitable number, including 24, which when divided by six is a power of two.

Regarding claim 12, Olafsson discloses a method of generating a sign pattern for a digital impairment learning (DIL) signal, comprising the steps of:

selecting (Fig. 4, block 402) a sign pattern length comprising a positive integer that is wholly divisible by four and is not wholly divisible by three (column 16, lines 58-64, wherein it is obvious that if a pattern of length L can be fixed to any suitable number as stated herein, then a number can be selected which is wholly divisible by four and is not wholly divisible by three, such as 16), the sign pattern comprising an even subsequence and an odd subsequence (column 14, lines 39-43), each subsequence comprising zeros and ones corresponding to negative and positive signs (Fig. 4, block 420 and column 4, lines 35-42), respectively;

balancing (Fig. 4, block 402) a number of zeros in the even subsequence with a number of ones in the even subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence; and

balancing (Fig. 4, block 402) a number of zeros in the odd subsequence with a number of ones in the odd subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence

Regarding claim 13, Olafsson discloses a method as recited in claim 12, wherein the DIL signal comprises at least one DIL segment having a DIL segment length (column 14, line 58) and wherein the step (Fig. 4, block 402) of selecting the sign pattern length comprises the step of:

selecting (Fig. 4, block 402) a sign pattern length (column 14, line 58) comprising a positive integer (column 14, lines 39-41) that is wholly divisible by four, that is not wholly

divisible by three and that wholly divides the DIL segment (column 16, lines 58-63), wherein the sign pattern length can be fixed to any suitable number.

Regarding claim 14, Olafsson discloses a method as recited in claim 13, wherein the DIL segment length divided by six is a power of two (column 16, lines 58-63), wherein the segment length can be fixed to any suitable number, including 24, which when divided by six is a power of two.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 23-25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olafsson (previously cited in Office Action 9/30/02) in view of Langberg et al. (previously cited in Office Action 9/30/02).

Olafsson discloses all of the subject matter as described in the previous rejection (see rejection of claims 1-3 and 12-14) except for the method and system written as a computer program product with a computer readable storage medium.

However, Langberg et al. teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer-

readable medium. The computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer-related system or method (note column 3, lines 51-65). One skilled in the art at the time the invention was made would have clearly recognized that the method of Olafsson would have been implemented into software. The implemented software would perform the same function of the hardware for less expense, greater adaptability, and greater flexibility. Therefore, it would have been obvious to have used the software in Olafsson as taught by Langberg et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

Allowable Subject Matter

7. Claims 4-11, 15-22, and 26-33 are allowable over prior art because related references do not disclose method and system for generating DIL signals involving separating symbol groups by a maximum group spacing difference, and generating a sequence of ucodes, each ucode in the sequence being selected from the plurality of ucodes in accordance with the uchord sequence and from within each of the plurality of uchords in accordance with the ucode offset sequence.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Krishnan et al. (U.S. Patent No. previously cited in Office Action 10/2403) discloses generating a digital impairment learning sequence with a sign pattern length comprising a positive integer that is wholly divisible by four and is not wholly divisible by three.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
May 27, 2004

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